

Motion Lab 1: Distance or Displacement

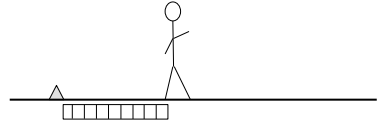
All measurements should be taken in meters, measure out to centimeters be sure to include units!

PART A

1. Place a cone where you will begin your walk and stand next to it. This marks the origin.

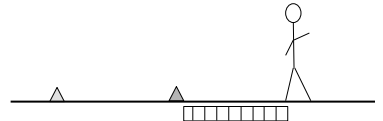


2. Walk 4 steps forward and stop. Using the meter stick, have your partner measure the distance you walked from the origin. Mark this spot with the second cone.



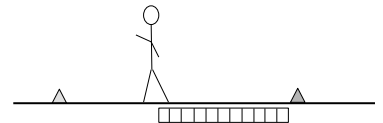
Distance: _____

3. Now walk 4 more steps forward. Your partner will measure the distance you walked from the second cone placed, not your origin. Move the cone to your current position.



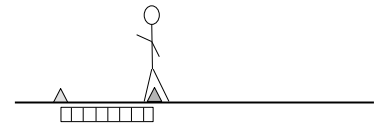
Distance: _____

4. Now turn 180° and walk 5 steps while your partner again measures the distance you walked. Move the cone to your current position.



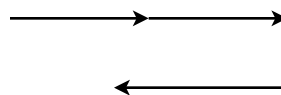
Distance: _____

5. Finally, have your partner measure how far you are from the origin. This is your measured displacement (Δx).



Measured Displacement (Δx): _____

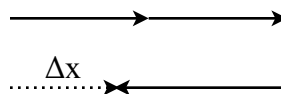
6. Find the distance you walked by adding all measurements together besides measured displacement. Show Work.



together besides

Distance (d): _____

7. Find the calculated displacement of your motion by measurements (2 & 3) and subtracting the *backwards* Work :



adding the *forward* measurement (4). Show

Calculated displacement (Δx): _____

Describe the difference between the distance you walked and the displacement of your motion? Answer using complete sentences.

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PART B

1. Start at your cone again, and walk 2 steps forward and measure how far you walked.

Write it here: _____

2. Turn 90° left, walk 3 steps and measure how far you walked.

Write it here: _____

3. Turn 90° left, walk 2 steps and measure how far you walked.

Write it here: _____

4. Turn 90° left, walk 5 steps and measure how far you walked.

Write it here: _____

5. Have your partner measure how far you are from the origin.

Write it here: _____. Is this your displacement or distance? **Circle your choice.**

6. Now figure out your distance and write it below. **Show your work and draw a picture of the motion.**

Distance (d): _____

Describe why your displacement is so much less than your distance walked. Answer using complete sentences.

PART C

1. Find your cone again, walk 3 steps forward, and measure how far you walked.

Write it here: _____

2. Turn 90° right, walk 4 steps, and measure how far you walked.

Write it here: _____

3. Have your partner measure your displacement.

Displacement (Δx): _____

4. Now figure out your distance and write it below. **Show work and draw a picture of the motion.**

Distance (d): _____

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Name: _____

Mrs. Ellis

5. Draw a picture of what your path looked like in part C. Show all your measured distances on the diagram.

Indicate your displacement (Δx) with an arrow.

6. What mathematical way we can solve for your displacement without measuring it? Calculate your displacement. Show your work.

WHAT YOU LEARNED

1. Describe the difference between distance and displacement.

2. What value is bigger, distance or displacement?

3. Describe a scenario when your distance and displacement would be the same value.

4. In the space below draw a mirror image of that produced in PART C #6 (flip it over its y-axis).

5. Does the displacement or distance change in this circumstance?